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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/615,851	07/10/2003	Tomohiro Okumura	2003_0932A	9994
513	7590	09/23/2004	EXAMINER	
WENDEROTH, LIND & PONACK, L.L.P. 2033 K STREET N. W. SUITE 800 WASHINGTON, DC 20006-1021			ALEJANDRO MULERO, LUZ L	
			ART UNIT	PAPER NUMBER
			1763	

DATE MAILED: 09/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/615,851

Applicant(s)

OKUMURA ET AL.

Examiner

Luz L. Alejandro

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –  
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Gupta et al., U.S. Patent 6,223,685.

Gupta et al. shows the invention as claimed including an apparatus 10 comprising: a vacuum container 10 defining a chamber therein, the container having a portion made of a dielectric material (see col. 2-lines 5-13), the portion having an impurity to be doped in a substrate provided in the chamber (see col. 2-lines 29-31); and a plasma source which can be either a capacitively or inductively coupled source (see col. 10-lines 33-45) for generating a plasma in the chamber by forming an electric field through the portion of the container, causing ion in the plasma to impinge against the portion of the container to draw the impurity out of the portion of the container into the chamber (see figs. 1A-1B and their description).

Concerning claims 2-3 and 7, note that the impurity is deposited either on or inside the portion of the container and the device fabricated in the chamber will inherently be doped with the impurity.

***Claim Rejections - 35 USC § 103***

Art Unit: 1763

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gupta et al., U.S. Patent 6,223,685 in view of Roderick et al., U.S. Patent 6,043,607.

Gupta et al. is applied as above but fails to expressly disclose wherein the plasma source has a coil or antenna and a power source for applying a high frequency power to one end of the coil or antenna and thereby generating the plasma in the chamber, the power source having a first power supply for supplying a first power with a first frequency and a second power supply for supplying a second power with a second frequency. Roderick et al. discloses a plasma source that has a coil or antenna and a power source for applying a high frequency power to one end of the coil or antenna 116

Art Unit: 1763

and thereby generating the plasma in the chamber, the power source having a first power supply 118<sub>1</sub> for supplying a first power with a first frequency and a second power supply 118<sub>2</sub> for supplying a second power with a second frequency (see fig. 1 and its description). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Gupta et al. so as to include the power source of Roderick because this provides a waveform generator that is less costly and complex than previous generators.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gupta et al., U.S. Patent 6,223,685 in view of Roderick et al., U.S. Patent 6,043,607 as applied to claim 4 above, and further in view of Blalock et al., U.S. Patent 6,095,159.

Gupta et al. and Roderick et al. are applied as above but do not expressly disclose wherein the other end of the coil or antenna is grounded. Blalock discloses a coil 36 which is connected on one end to an RF power supply 32 and on the other end to ground (see fig. 1 and its description). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Gupta et al. modified by Roderick et al. so as to have the coil connected on one end to ground because Blalock et al. shows that such a coil is suitable for generating an effective inductively coupled plasma.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gupta et al., U.S. Patent 6,223,685 in view of Baldwin, Jr. et al., U.S. Patent 6,280,563.

Gupta et al. is applied as above but fails to expressly disclose a biasing electrode provided between the coil or antenna and the portion of the container and a power source for applying a high frequency power to the biasing electrode. Baldwin, Jr. et al. discloses the use of an electric conductor 44 disposed between the induction coil 36 and the plasma generation space, said electrical conductor being capable of electrical grounding or application of a high frequency voltage (see figs. 1-2 and their description). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Nakagawa et al. so as to include the electric conductor of Baldwin, Jr. et al. because such a structure allows for more efficient cleaning of the dielectric window.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luz L. Alejandro whose telephone number is 571-272-1430. The examiner can normally be reached on Monday to Thursday from 7:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory L. Mills can be reached on 571-272-1439. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1763

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Luz L. Alejandro  
Primary Examiner  
Art Unit 1763

September 20, 2004